

seemed to be helpful in keeping the water pure, but I did not know how to account for it.

Should these experiments be perfected, what would hinder our keeping collections of marine animals for observation and study, even in London and other inland cities? Such a degree of success as I have attained would admit of so desirable a consummation, for even in London no great difficulty would be experienced in having a jar of sea-water brought up once in a couple of mouths. I hope to see the lovely marine Algæ too, that hitherto have been almost unknown except pressed between the leaves of a book, growing in their native health and beauty, and waving their delicate translucent fronds, on the tables of our drawing-rooms and on the shelves of our conservatories.

I remain, Gentlemen, your obedient servant,

P. H. GOSSE.

Ilfracombe, Sept. 10, 1852.

XXV.—Notes on the genus *Cyclostoma*; and Characters of some new species from India, Borneo, and Natal. By W. H. BENSON, Esq.

1. *Cyclostoma Nilagiricum*, nobis, n. s.

Testa umbilicata, depresso-turbinata, solida, liris spiralibus 8–9 majoribus, quibusdam parvis obsoletis inæquidistantibus interjectis munita, castanea, ad periphæriam albido-articulata, infra fascia latissima saturatiore, superne strigis radiatis angustis undatis albidis frequentioribus, subtus rarioribus ornata; spira ad apicem exsertiuscula, obtusata; anfractibus 5, convexiusculis, ultimo ad periphæriam subfuniculato-carinato, superne angulato, circa suturam late planato, subtus circa periomphalum excavatum lævigatum compresso, umbilico mediocri profundo, subcylindrico; apertura obliqua, pyriformi-rotundata, aurantiaca, fauce cærulescente, peristomate expanso, incrassato, reflexiusculo, aurantiaco, breviter adnato, prope umbilicum leviter sinuato, superne angulato, producto, intus sulco intrante impresso.

Diam. major 43–45, minor 34–36, axis 22–24 mill.

Hab. ad latus occidentale Montium “Nilgherries” teste Jerdon.

This shell was at first supposed to be *C. Indicum* of Deshayes, but proved to be widely different. It is allied to *C. Jerdoni*, nobis, and to *C. Ceylanicum*, Pfeiffer. *Cyclostoma Indicum* is placed by the last-mentioned author between *C. validum* and *C. linguiferum*, being provided with a linguiform process to the lip, near the umbilicus, of which feature, however, no notice is taken by Deshayes either in his specific character or in his extended description. The remark in vol. viii. of the ‘Annals,’

p. 193, that *C. Indicum* extended its range to the Nilgherries, requires to be expunged, having reference to the present species, while *C. Indicum* is not at present known to extend beyond the vicinity of Bombay.

The young of *C. Nilagiricum* preserves its distinctness from *C. Jerdoni* in the same condition by its sculpture, colour, the depression of the spire, the broad flattening observable above the shoulder of the whorl, the angulation of the shoulder, the excavation of the periomphalum, its compressed angulated edge, and by the blue colour of the interior, which is bordered with chestnut in the young, but gradually gives place to the orange of the peristome in the adult example of *C. Nilagiricum*, while the whole of the interior is white in both states of *C. Jerdoni*. The spiral striæ are not very conspicuous on the underside of *C. Nilagiricum*, and are entirely discontinued at a short distance from the periphery, the region of the umbilicus being smooth. In most of the allied species the umbilicus and its neighbourhood are pale, but in this species the dark chestnut ground colour of the shell extends over the whole exterior surface where not broken by flecks or streaks of whitish. Dr. T. Jerdon procured it from the forest on the western edge of the Nilgherries, while *C. Jerdoni* was found by him to inhabit the north-east face of the same mountain group.

2. *Cyclostoma Malayanum*, nobis, n. s.

Testa depresso-turbinata, lævigata, spiraliter exilissime obsolete striata, supra castanea, albido undulatum strigata, interdum plurifasciata, subtus albida, castaneo anguste fasciata, infra periphæriam fascia latiuscula saturata, albido sparse articulata, ornata; spira exsertiuscula, apice acutiuscula; anfractibus quinque subconvexis, ultimo rotundato, subtus convexo; apertura vix obliqua, magna, circulari, albida; peristomate duplicato, leviter adnato, externo plane expanso, superne arcuato, labio angusto; umbilico mediocri, pervio, subpérspectivo.

Diam. major 43, minor 32, axis 29 mill.

Hab. in montibus vallibusque Insularum Penang et Lancavi, necnon in Peninsula Malayana. Teste Dr. T. Cantor.

This shell, collected by Dr. Cantor, is one of the group which contains *C. Pearsoni*, *Siamense*, *Tuba*, &c. The peculiarly flattened double peristome will at once serve to distinguish it from any of the allied species. The colouring also is of a particularly sober character.

3. *Cyclostoma Anostoma*, nobis, n. s.

Testa perforata, turrata, tenui, exiliter striata, pallide castanea, apice acutiuscula albida; anfractibus septem convexis, ultimo antice bre-

viter ascendente, basi rotundato; apertura ampla, vix obliqua, leviter sursum spectante, subcirculari, fauce castanea, margine rufo; peristomate duplicato, tenui, interno continuo, subito expanso, externo plane dilatato, præcipue ad partem columellarem, vix reflexiusculo.

Axis 23, diam. anfr. penult. 10, diam. apert. extern. 9, alt. apert. $7\frac{1}{2}$ mill.

Hab. in Insula Borneo.

In form much resembling *C. altum* of the Philippines, but shorter and more rapidly tapering from the base to the summit, differing also in tenuity, in the pale apex, the absence of a funiculate keel at the base, the more convex whorls, and the more coarsely striate ultimate volution. The penultimate whorl is not broader than the last, as it is in *C. altum*; at the same place where the channel occurs on the inner lip in that shell there appears a very slight indentation. The summit and succeeding whorl are white, as in *C. Guildingianum*, Pfeiffer. Two slightly impressed lines traverse the last whorl spirally in the only specimen received through Dr. Bacon. They appear to be accidental, and have therefore been omitted in the specific description.

4. *Cyclostoma quadrifilosum*, nobis, n. s.

Testa umbilicata, globoso-turbinata, sub epidermide hispida, et crebro oblique lamellata, nitida, spiraliter 4-lirata, interstitiis striis minutissimis spiralibus, alias obliquas decussantibus, munitis, castanea, superne strigis pallidis distantibus ornata; sutura impressa; spira conica acutiuscula; anfractibus 5 convexis, ultimo liris 4 filiformibus instructo, prima supera, secunda ad periphæriam, tertia inferiori, quarta basali; umbilico angusto pervio; apertura vix obliqua, subcirculari, fauce castanea; peristomate duplicato, interiori ad dextram recto, vix porrecto, ad sinistram expanso, sinuato, intus leviter incrassato, albido, exteriori expansiusculo, nigrescente, antice superne prorsum arcuato.

Diam. major 6, minor 5, axis 5 mill.

Hab. in Insula Borneo.

The fourth filiform carina, which is present in both specimens received (the other three being situated as in *C. 3-liratum*, Pfr.), the lamelliform epidermis, the spiral striæ, the duplication of the peristome, and the other characters of the aperture, seem to justify the distinction of this species from *C. 3-liratum*, which inhabits the same island, but which I only know from Pfeiffer's description. *C. 4-filosum* is a little smaller than that species. The outer lip is separated from the internal peristome by a slight sulcus. The two upper threads are continued on the penultimate whorl, as in *3-liratum*.

5. *Cyclostoma Wahlbergi*, nobis, n. s.

Testa mediocriter umbilicata, depresso-turbinata, scabre et acute radiato-striata, luteo-glauca, epidermide fusca; spira vix elevata, acutiuscula; anfractibus 4 convexis, ultimo rotundato; apertura ampla, alta, rotundata, peristomate acuto; umbilico aperto, profundo.

Diam. major 14, minor 11, axis 7 mill. Pfeiffer *Cyc. 416*

This is probably the species which Wahlberg got at Natal, and which, by some misconception, was attributed to the fauna of South Africa, by Krauss, as *C. translucidum*, a South American shell possessed of a calcareous operculum; whereas that of the present species is thin and horny. The example described was collected at Natal, with *Bulimus Kraussi*, and transmitted to Mr. S. Stevens with other specimens of a smaller size.

Cyclostoma Phænotopicum, Benson, Annals, vol. viii. p. 190.

The following characters require to be added to the previous description of the shell, of which I have received an adult specimen from Darjiling:—

Peristomate verticali, integro, expansiusculo, subreflexo, superne duplicato, lamella exteriori ibidem subangulata.

Diam. major 13, minor 10, axis $5\frac{1}{2}$ mill.

Besides the figure of *C. spiraculum*, Sowerby, No. 272 of the 'Thesaurus,' which is *Pterocyclos hispidus* (*Spiraculum hispidum* of Pearson), Sowerby added No. 273, a figure of a small shell, also from India, which he referred to the same species. It was, however, destitute of the spiracle and with a different aperture, and was so clearly distinct that it has been referred by several authors to other species. In the 'Conchylien Cabinet' Pfeiffer assigned it, at first, with a mark of doubt, as well as *C. Papua*, Quoy, to *C. helicinum*, Chemnitz; although he afterwards saw reason to distinguish *C. helicinum* from *C. Papua*, which he now refers, together with *C. Distomella*, Sowerby (a very different shell?), to *C. Hebraicum*, Lesson. Gray also attributes fig. 273 of the 'Thesaurus,' with a mark of doubt, to *C. Papua*. A glance at the figure, Conch. Cab. pl. 28. f. 14-15, would at once dispose of this reference; while I have no hesitation in referring the stray form in the 'Thesaurus' to an uncoated specimen of *C. Phænotopicum*, with which its size, form, zigzag markings, and conformation of the mouth exactly agree.

Cyclostoma constrictum, Benson, Annals, vol. viii. p. 188.

Another specimen of this shell from Darjiling confirms an additional character for this species, tending still further to show

its relation to the more Westerly Himalayan species, *C. strangulatum*, which was alluded to in my former remarks. The following character should be added:—"Callo suturali retroverso, pone constrictionemposito (ut in *C. strangulato*)."

Cyclostoma funiculatum, Benson, Journ. Asiat. Soc. 1838.

Specimens received of the young of *C. funiculatum*, in different stages of growth, show very different forms, which might cause the shell to be assigned to other species, or even to a different genus, if unaccompanied by the thin horny operculum. In the young state, with $5\frac{1}{2}$ whorls, the shell is pale horn colour, with a slight rufous tint, the periphery of the last whorl is angular, the base slightly convex, nearly planate, the mouth oblong-quadrate, the right and left lip nearly parallel, and forming a right angle, somewhat rounded, with the horizontal base. In this state, moreover, the shell is perforate. In the next stage, with six whorls, the shell has become thicker and more opaque, the epidermis reddish olive, the periphery of the last whorl more acutely angular, the base concave, while the umbilicus is filled up, the mouth is elliptical, and the square base of the aperture has given place to an angular inferior termination. In the adult the aperture is rounded, the peristome reflected and thickened with an orange enamel, and the periphery of the last whorl is rounded, and has a funiculate border round the impervious rimation. The adult *C. funiculatum* is figured in plate 31 B. of the 'Thesaurus,' f. 316-7.

Cyclostoma Aurora, Benson, Annals, vol. viii. p. 186.

The shell described was an uncoated and worn specimen. The following addition will represent the species when perfect:—"Carinarum interstitiis striis elevatusculis spiralibus obductis, rubente, supra strigis castaneis fulguratis, subtus fasciis pluribus, mediana latiori, variegata; epidermide tenui fugace oblecta. Operculo ut in *C. Involvulo*."

The specimens which have enabled me to make the above corrections were collected for me, at Darjiling, by Mr. Robert Trotter, of the Bengal Civil Service, together with some new forms of *Helix*, and a new *Clausilia*, the third species which has been found in Northern India, where the genus is confined to the mountain ranges, and appears to have been debarred, by the intervention of the Gangetic plain, from penetrating to the mountains of Central or Southern India, whereas in ultra Gangetic India the continuous mountain ranges have enabled species to descend to a low latitude in the Malayan Peninsula.